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ABSTRACT

This paper describes and evaluates the coverage and content validity of the vocational/career education tests available commercially to high school educators. Tests were analyzed with respect to their collective coverage of the vocational/career education curriculum goals appropriate to grades 11 and 12, and the extent to which each possessed good content validity as defined by two criteria. The results indicate a good overall coverage of the curriculum goals for secondary education, however the poor content validity of the majority of tests is disappointing. The results of this analysis have many implications for the improvement of vocational/career education tests. (Au hor)

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Coverage and Content Validity of Vocational/Career Education Tests

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Abstract

This paper describes and evaluates the coverage and content validity of the vocational/career education tests available commercially to high school educators. Tests were analyzed with respect to their collective coverage of the vocational/career education curriculum goals appropriate to grades 11 & 12, and the extent to which each possessed good content validity as defined by two criteria. The results indicate a good overall coverage of the curriculum goals for secondary education, however the poor content validity of the majority of tests is disappointing. The results of this analysis have many implications for the improvement of vocational/career education tests.

COVERAGE AND CONTENT VALIDITY OF VOCATIONAL/CAREER EDUCATION TESTS

Vocational and career education testing has traditionally been oriented toward career guidance in the schools. Much of the vocational testing in the high schools is conducted by counselors and psychologists who use results to help their students make realistic and satisfying career decisions regarding their futures. If tests are to have an impact on career exploration and development, counselors must have complete assurance that a test they have selected actually measures what it purports to measure. But because counselors are expected to be knowledgeable about many aspects of educational, vocational, and personal guidance, it is unrealistic to expect that they be experts in measurement as well.

Publishers must assume a responsibility for assisting counselors to select the correct test for the appropriate purpose. It is no longer satisfactory for a test publisher to state that the test measures a goal of education; he must specify the goal, its limitations and extensions, and its manifestations in terms of behaviors to be learned. Then the publisher should present some documentation that his claims are in fact supported. In fact, publishers should provide information about tests which is as complete and accurate as possible in order to enable counselors to select tests best suited to their purposes.

In response to this concern, the Center for the Study of Evaluation at U.C.L.A. undertook a comprehensive test evaluation project which included 1) a survey of the vocational/career education tests that are commercially available for use with high school sutdents in grades 11 and 12, and 2) an evaluation of their adequacy with respect to content validity (CSE Secondary School Test Evaluations: Grades 11 and 12, Hoepfner et al., 1974).

Method

In order to assess the availability and content appropriateness of vocational/career education tests designed for use with 11th and 12th grade students, the Center for the Study of Evaluation first developed a comprehensive taxonomy of educational goals appropriate to secondary school education. Each goal category consists of a range of behaviors, achievements, or objectives. Only the portion of this taxonomy that pertained to vocational and career education was used for this paper. There are four major goal categories defined in the taxonomy under the heading of vocational/career education: General Knowledge and Skills for Vocational Success, General Vocational Aptitudes, General Vocational Attitudes, and General Vocational Interests. Subsumed under each of these four major goal categories is a total of 25 specific, behaviorally described, vocational/career education goals. The names of the goal categories are listed in Table 1.

The beginning step of the evaluation process was to assign each test and subtest to the particular goal category in the taxonomy into which it best fit. Judgments were made on the basis of careful reading of the items in each test and assignment of each item to a specific goal category.

After assignments to goal categories were completed, test evaluations were made according to predetermined standards. The evaluations of content validity were made according to two criteria. The first criterion addressed the question: what percentage of the range of behaviors, achievements, or objectives in the goal category to which the test was assigned do the items assess? To estimate this percentage, the total set of items of the test was compared to the range of behaviors in the goal description. Rater judgments credited the test with one point if 50% or more of the goal was deemed to be assessed and zero points otherwise.

The second criterion asked: what percentage of the test items actually assess the goal category? If more than 67% of the items assess behaviors in the assigned goal category, the test was credited with two points; if between 33-67% of the items belonged, the test was credited with one point; and if fewer than 33% of the items belonged, the test was credited with zero points.

The following example illustrates the above procedure. A 50-item test was found to have 15 items assessing Agricultural Vocations while the remaining 35 items were distributed evenly among several other goals. Thus this test was assigned to the goal category "Agricultural Vocations". Under Agricultural Vocations there are four specific objectives. It was found that three of the four objectives were assessed by the 15 items and hence a value of one was assigned for the first criterion. However, the test was assigned a value of zero for the second criterion since the 15 items were less than 33% of the total test items.

Tests having content validity were defined as those receiving the maximum number of points on the two criteria of percentage of goal coverage and percentage of items belonging in the goal.

Results

The survey of the coverage of vocational/career education tests, which are appropriate for use with high school students in grades 11 and 12, found a total of 1,501 tests and subtests commercially available. The distribution of these 1,501 tests among the various vocational/career education goal categories is presented in Table 1. The table also presents content validity data according to the two criteria previously described. The number of tests in each goal category that assess more (N_2) or less (N_1) than 50% of that goal (criterion 1) is given. Table 1 further indicates the number of tests (N_3) that assess more than

50% of their goal and have more than 67% of their items belonging in the same goal (criteria 1 & 2 combined).

Insert Table 1 about here

Coverage of Vocational/Career Education Tests

Because a total of 1,501 tests and subscales were found in the vocational/career education field, it seems safe to say that this field is well-supplied with tests overall. This total would seem to reflect the growing importance of vocational and career education in the secondary curriculum. The major goal area of General Vocational Interests received the highest percentage of assigned tests, 63.02% of the total number of tests. Mechanical-Manual Interests, Social Interests, Theoretical Interests and Creative Interests are well covered, as each was addressed by more than 118 tests. There were only 10 tests of Domestic Interests, the lowest number for any goal in this major area.

In contrast, the other three areas (i.e., Knowledge and Skills for Vocational Attitudes, General Vocational Aptitudes, General Vocational Attitudes) are less well covered. Within these three areas, eight different goals are covered by fewer than 10 tests. This does not mean to imply that goals with fewer than 10 tests are insufficiently covered, because obviously a single good test for any goal would be completely adequate. It simply indicates that in choosing a test for a goal in which few tests are available, the counselor encounters more restriction of choice than if there had been a greater number of tests to choose from at the beginning.

Content Validity of Vocational/Career Education Tests

With respect to content validity, a less encouraging situation exists when we observe the number of tests that cover more than 50% of their respective

goal. Overall, 206 tests, which represent only 13.74% of the total number of 1,501 tests, satisfy the first criterion of content validity. Additionally, in nine goals, none of the tests was judged to cover more than 50% of their goal. Only in two goals did a majority of the tests receive full credit on the first criterion. These goals were Mathematical Facility and General Vocational Attitudes with 65.63% and 66.67% of these tests covering more than half of their respective goals. The reader should note that the major goal area of General Vocational Attitudes is covered by only three tests.

Regardless of the percentages of tests doing well on the first criterion, Table 1 indicates six goals containing 21 or more tests that receive full credit on criterion 1. These six goals (i.e., Clerical Aptitude, Spatial Aptitude, Mathematical Facility, Mechanical-Manual Interests, Social Interests, Office Interests) are found entirely within two major areas of General Vocational Aptitudes and General Vocational Interests and are equally divided between the two areas. Even though there exists a considerable number of tests within these six goals that satisfy the first criterion of content validity, their numbers are so small as compared to the total number published in each goal, that they present a problem to the counselor who would hope to select the very best ones for possible use.

The second criterion of content validity was defined as the percentage of test items belonging in the appropriate goal category. Only tests that satisfied criterion 1 were judged on this second criterion. Those tests that did not satisfy criterion 1 were not examined further. Tests that received maximum credit on both criteria (more than 50% and more than 67% on criteria 1 and 2 respectively) were defined as possessing good content validity.

Observing Table 1, we find that the number of tests possessing good content validity is 172. This represents 11.45% of the total number of 1,501 tests.

In 10 goals not one test satisfies the minimum requirements of good content validity, while in another 10 goals no more than three content validated tests (i.e., meeting criteria 1 and 2) are present. The remaining nine goals are represented by nine or more content validated tests all of which are found in the two major goal categories of General Vocational Aptitudes and General Vocational Interests. The greater number of content validated tests in these two particular goal areas is probably due to the fact that more were published to begin with and not that they are necessarily constructed better. In those 10 goals where not one content validated test is present, there is a clear and urgent need for construction of new tests having sufficient content validity. These 10 goals are: Knowledge and Skills for Vocational Success, Agricultural Vocations, Distributive Vocations, Health Occupations, Technical Vocations, General Vocational Aptitudes, Following Directions and Applications, Vocational Creativity, Vocational Responsibility, and Career Preparation.

It is interesting to note that most of the 206 tests satisfying the first criterion also received full credit under criterion 2 (83.49%). More specifically, in 10 out of 19 goals that have tests receiving maximum credit on both criteria, all tests the passed the first criterion also got the maximum score on the second criterion. This fact is illustrated in the last column of Table 1 by the 100% entries. This finding suggests that publishers either pay full attention to the problem of content validity of ignore it totally.

Discussion and Conclusions

According to Super (1953, 1963), as young people think about entering an occupation, they seek an occupational role that is reasonably consistent with their ideas about the kind of person they are - their interests, abilities, and personality traits. Career counseling may be seen as an orderly process of

helping people develop and accept an integrated picture of themselves and their role in the world of work, testing this concept against reality, and finally in converting it into a satisfying choice (Herr & Cramer, 1972).

This view implies that the prime value of vocational/career education tests lies, not so much in any ability to predict occupational success, but rather in their capacity to provide the necessary information required to help a student gain a much more meaningful picture of himself. The adequacy of the 1,501 vocational/career education tests and subscales must be gauged by the extent to which they actually provide such essential information to high school counselors. Tests must have complete congruence with the educational goals they intend to assess. Thus, the quality of fit between a test and the particular goal in vocational/career education which it purports to measure is of paramount importance.

Although the tests provide good overall coverage of the vocational/career education goals for secondary education, the poor content validity of the majority is disappointing. In most cases this was because a majority of items of a given test did not measure the goal of primary interest. The entire test often attempted to measure several goals concurrently and as a result did not concentrate on the single goal of primary interest. Counselors should be cautioned that any given vocational/career education tests they intend to employ might not be sufficiently valid for their particular purposes.

In conclusion, the results of this analysis of tests should have immediate and long term implications for the improvement of assessment instrumentation by pointing out clearly some of the content validity shortcomings that characterize today's published vocational/career education tests. Publishers and test constructors should consider more seriously the content validity of their future tests. They should analyze each item separately and the test as a whole for quality of fit with the specific goal that the test intends to assess.

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TABLE 1

Number of Tests According to Content Validity Criteria

Goal	Total N	Criterion 1				Criteria 1 and 2 Combined		
		Less than 50%		More than 50%		More than 50% and More than 67%		
		N_1	%	N_2	%	N_3	% of Total	% of N_2
Knowledge and Skills for Vocational Success	2	2	100.00	0	0.00	0	0.00	0.00
Agricultural Vocations	4	4	100.00	0	0.00	0	0.00	0.00
Distributive Vocations	27	27	100.00	0	0.00	0	0.00	0.00
Health Occupations	12	12	100.00	0	0.00	0	0.00	0.00
Gainful Home Economics Vocations	4	3	75.00	1	25.00	1	25.00	100.00
Office Occupations	99	96	96.97	3	3.03	3	3.03	100.00
Technical Vocations	31	31	100.00	0	0.00	0	0.00	0.00
Trade and Industrial Occupations	84	83	98.81	1	1.19	1	1.19	100.00
General Vocational Aptitudes	3	3	100.00	0	0.00	0	0.00	0.00
Clerical Aptitude	77	56	72.73	21	27.27	13	16.88	61.90
Following Directions and Applications	5	5	100.00	0	0.00	0	0.00	0.00
Spatial Aptitude	65	42	64.61	23	35.29	15	23.07	65.21
Mathematical Facility	32	11	34.38	21	65.63	20	62.50	95.24
Vocational Creativity	1	1	100.00	0	0.00	0	0.00	0.00
Managerial Aptitude	35	32	91.43	3	8.57	3	8.57	100.00
Interpersonal Skills	6	5	83.33	1	16.67	1	16.67	100.00
General Vocational Attitudes	3	1	33.33	2	66.67	2	66.67	100.00
Vocational Responsibility	10	8	80.00	2	20.00	0	0.00	0.00
Job Adaptability	13	11	84.62	2	15.38	1	7.69	50.00
Vocational Relationships	23	20	86.96	3	13.04	1	4.35	33.33
Career Preparation	19	19	100.00	0	0.00	0	0.00	0.00
General Vocational Interests	23	21	91.30	2	8.70	1	4.35	50.00
Mechanical-Manual Interests	118	95	80.51	23	19.49	23	19.49	100.00
Social Interests	288	264	91.66	24	8.33	21	7.29	87.50
Theoretical Interests	230	218	94.78	12	5.22	9	3.91	75.00
Outdoor Interests	63	46	73.02	17	26.98	17	26.98	100.00
Creative Interests	131	120	91.60	11	8.40	11	8.40	100.00
Office Interests	83	51	61.45	32	38.55	27	32.53	84.38
Domestic Interests	10	8	80.00	2	20.00	2	20.00	100.00
Total	1501	1295	86.28	206	13.72	172	11.45	83.49